WisDOT RD&T Home

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Putting Research to Work

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Technical information for state DOT highway professionals
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Research World

Concrete Innovations Save Time for Belgian Firm

Facing a tight deadline, a Belgian construction company used several innovations on a 10-mile freeway project. They included a new 3-D imaging system for string-lining, slipforming using drier-than-normal concrete mixes, and slope-measuring sensors on pavers. See the article in *Roads & Bridges* at http://www.roadsbridges.com/rb/index.cfm?fuseaction=showArticle&articleID=5545&learnMore=yes&CFID=80155&CFTOKEN=20155737.

Young Male Drivers Relate to UK Safety Campaign

Britain's hard-hitting road safety campaign, "For My Girlfriend," has won a 2004 Prince Michael International Road Safety Award. The campaign confronts young male drivers with the grim prospect of killing a girlfriend passenger by speeding. The campaign is backed by a Web site, http://www.fmg.org.uk, with information about road safety issues, vehicle maintenance, reaction times and other topics. Read the press release at http://www.fmg.org.uk/news04_award.html.

Australia Eyes Global Role in Telematics Industry

Australia has taken a big step toward fostering a competitive telematics industry with a $300,000 grant to the Australian Electrical and Electronic Manufacturers' Association. Telematics uses wireless voice and data communication systems to provide services such as vehicle tracking, real-time traffic data and emergency aid. Read the article in *Electronics News* at http://www.electronicsnews.com.au/articles/21/0c024a21.asp.

TranScan Features Bridge Technology Tour

The fall edition of NCHRP's *TranScan* reports on the April scan tour of Japan, Belgium, the Netherlands, Germany and France, which studied bridge fabrication practices like computer-controlled section transporters. Construction management and quiet pavement practices at home and abroad also earn attention. http://www.trb.org/publications/nchrp/transcan_8.pdf

Helping Riders Save Riders

In the United Kingdom, unique courses being designed specifically for motorcyclists will equip them to deliver emergency aid to a fellow cyclist involved in a serious accident. Participants will learn how to manage the accident scene, the injury and themselves in a critical situation, and will learn skills including airway and spine management, helmet removal and CPR. Read the press release at http://www.mcia.co.uk/_Attachments/185_101CMS.pdf.

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Other e-newsletters for transportation professionals:
TRB E-Newsletter from the Transportation Research Board: http://gulliver.trb.org/news/.
The AASHTO Journal from the American Association of State Highway and Transportation Officials: http://www.transportation.org/publications/journal.nsf.
CTS Research E-News from the University of Minnesota: http://www.cts.umn.edu/publications/enews/.
Texas Transportation Researcher from TAMU's Texas Transportation Institute: http://tti.tamu.edu/researcher/.
Austroads Newsletter from Austroads: http://www.austroads.com.au/austroads_newsletter.html.
Transportation Communications Newsletter: http://groups.yahoo.com/group/transport-communications/.

Designing for the Future

De Pere Bridge Uses Community-Sensitive Design

WisDOT District 3 engineers have worked extensively with the city of De Pere in designing a replacement for the aging Claude Allouez bridge over the Fox River. The current proposal for the new four-lane bridge includes a roundabout at the east-side bridge approach, which will require less right-of-way than a traditional intersection, saving two buildings from destruction. Plans also feature aesthetic elements such as decorative lanterns on the bridge. For more on the project, see http://www.dot.wisconsin.gov/projects/d3/claude/index.htm or contact project manager Chuck Karow at charles.karow@dot.state.wi.us.

GIS Mapping for Environmental Justice

As part of its environmental justice efforts, Oregon DOT has assembled a GIS database that identifies census tracts and block groups with low-income and minority populations. Maps generated from the data will serve as screening tools for potential environmental justice issues in planned transportation projects. See page 2 of ODOT's research newsletter at http://www.oregon.gov/ODOT/TD/TP_RES/news/ResearchNewsFall04.pdf, and view the final report at http://www.oregon.gov/ODOT/TD/TP_RES/docs/Reports/EnvirJustRpt.pdf.

Making Safety a Priority in Highway Design

Texas DOT highway engineers will soon be incorporating quantitative safety analysis early in project planning, thanks to a six-year Texas Transportation Institute research project targeting safety in highway design. The study will address both new construction and rehabilitation, yielding guidelines on roadway curvature and slope, median treatments, shoulder widths, and more. See the article in the latest issue of Texas Transportation Researcher at http://tti.tamu.edu/researcher/newsletter.asp?vol=40&issue=3&article=6.

Environmental Liaisons Strive to Speed Permitting

To speed environmental permit approvals, two Alaska DOT&PF employees will co-locate with the Alaska District of the Army Corps of Engineers, which issues federal permits for highway and airport projects. An agreement signed last month established two two-year liaison environmental analyst positions funded by the DOT and supervised by the COE. See http://www.dot.state.ak.us/comm/pressbox/arch_2004/PR_COE_agreement.shtml.

New Cable-Stayed Bridge Aims to Be Barge-Proof

A bridge under construction across the Mississippi River near Greenville, Miss., will replace a span that has been struck by more barges than any other bridge over the river. Its location near an upstream bend in the river makes it prone to collisions; bridge engineers also face challenges in high winds and a swift current. Read more in *Roads & Bridges* at http://www.roadsbridges.com/rb/index.cfm?powergrid=rfah=|cfap=&CFID=1250792&CFTOKEN=16720696&fuseaction=showArticle&appDirectory=rb&articleID=5583.

Early Utility Coordination Accelerates SCDOT Plans

As part of their work on South Carolina DOT's ambitious multi-year highway improvement program—which aims to complete nearly 200 projects in seven years rather than 27—Parsons Brinckerhoff staff began utility coordination in the preliminary planning phase. Early involvement improves the quality of utility information on project maps and allows utility owners to be part of the design process. Read more in the latest issue of *PB Network* at http://www.pbworld.com/news_events/publications/network/issue_58/58_19_armstrong_utility_coordination.asp.

Robotic Crawler Goes Where Engineers Can't

A robotic remote imaging tool is giving Alaska DOT engineers a look inside culverts, drains and other tight spaces. The device helps them make informed decisions about structural reinforcement placing, pipe replacement and more. See page 15 of Alaska DOT's LTAP newsletter: http://www.dot.state.ak.us/stwddes/research/assets/pdf/04v29n3.pdf.

Construction and Materials Innovations

How to Use Less Aggregate and Like It

Reducing aggregate use on low-volume rural roads has the potential to save money and time. A new technique called the Giroud-Han pavement design method uses geotextiles to improve stress distribution, with the potential to reduce aggregate base thickness needs by an inch. Read more in *Roads & Bridges* at http://www.roadsbridges.com/rb/index.cfm?fuseaction=showArticle&articleID=5547&learnMore=yes&CFID=80155&CFTOKEN=20155737.

Predicting Bridge Scour from Discharge Rates

Scour around bridge foundations has been linked to bridge failings across the country since the late 1980s. A Georgia researcher has developed a method for estimating bridge abutment scour by focusing on discharge characteristics rather than abutment length; see http://www.tfhrc.gov/structur/hydrlcs/pubs/99156/index.htm.

Colorado Drives Off with 10-Year Asphalt Warranty

Construction recently began on US 24 in Colorado after the Colorado Asphalt Pavement Association helped broker a 10-year warranty for a five-mile stretch of 8-inch asphalt pavement. CAPA hopes the project will open the door for future design-build bids on major transportation corridors. Read more at http://www.co-asphalt.com/asphalt_news/newsletter/documents/CAPAHighroad1.pdf.

Nondestructive Bridge Test Finds Cracks in Steel

Last month a California firm added Pennsylvania to a short list of states where it has beta-tested a new nondestructive testing device for bridge steels. The Electrochemical Fatigue Sensor detects cracks in bridge steels, including those missed by eddy current surveys. Read the press release at http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20041117005015&newsLang=en.

Modified Paver Screed Simplifies Recessed Striping

By welding quarter-inch-thick steel pieces to the bottom of a paver screed, a Colorado contractor was able to create recessed surfaces for skip and shoulder stripes on a new concrete four-lane highway. Marking tape used in the recesses was still bright after three years; read the CDOT research report at http://www.dot.state.co.us/publications/PDFFiles/Recessedstriping.pdf.

Environmental Stewardship in Construction

Identified as the activities in which “impacts happen” in transportation infrastructure, construction and maintenance provide the fulcrum of a new 850-page NCHRP report on eco-friendly practices. The study aims to be seminal in shaping future practice; see http://environment.transportation.org/research_news/nchrp/NCHRP-25-25-04.pdf.

Full-Depth Reclamation in Cold Weather

The latest edition of the Portland Cement Association’s newsletter looks at recent developments in full-depth reclamation in cold-weather areas like eastern Washington and Wyoming. It also features the latest in pervious asphalt, which uses coarse aggregate and little to no sand. See http://www.cement.org/pavements/ec/pv_ec_04nov.htm.

NCAT Tests Show Higher PG Suffers Less Rutting

The National Center for Asphalt Technology has announced the results of rutting research on its 2000 test track. Among the findings was that PG 76-22 showed 60% less permanent deformation than PG 64-22. See page 5 of the latest issue of *Asphalt Technology News*: http://www.eng.auburn.edu/center/ncat/newsl/newsfall_04.pdf.

Operating/Optimizing the System

Maintenance QA Peer Exchange Highlights Online

Highlights from the Maintenance Quality Assurance Peer Exchange, which brought roughly 75 state transportation professionals to Madison in October, are available at the Midwest Regional University Transportation Center Web site. The conference site includes a document and materials library, a one-page summary of the event, and PowerPoint presentations from the three-day peer exchange. See http://www.mrutc.org/outreach/MQA/.

WisDOT Signs Direct Motorists to Ski Areas

WisDOT is making it easier for motorists to find their way to Wisconsin ski areas with new signs pointing the way to outdoor winter recreational areas. The signs feature a white snowflake on a brown background with the words “Ski Area” and the name of the specific site. WisDOT will be responsible for acquiring, installing and maintaining the signs, which will remain up year-round. WisDOT Secretary Frank Busalacchi said the signs will help the state’s winter tourism industry, which generates more than $2 billion in revenue annually. Read the news release at http://www.dot.wisconsin.gov/news/news/2004general/opa-skisigns235.htm.

FHWA Teams Up with The Weather Channel

In partnership with The Weather Channel, FHWA’s Office of Operations created a video detailing the effects of weather on highway operations. The video, which aired in late November, touched on efforts to improve operations and highlighted low-visibility warning systems, maintenance decision support systems, and 511 services. Read more about “Road Risk” at http://www.ops.fhwa.dot.gov/weather/fhwa_wchannnel.htm.

Report Lays Out Winter Operations Guidelines

Just in time for flurries and icy road conditions comes an NCHRP report detailing guidelines for selecting snow and ice control strategies and tactics for winter maintenance operations. The report aims to assist winter maintenance personnel in selecting the best level of service and managing snow and ice control resources. Review the full report at http://gulliver.trb.org/publications/nchrp/nchrp_rpt_526.pdf.

Nonintrusive Traffic Data Collection

A Minnesota-led pooled fund study is testing alternatives to conventional traffic data collectors along high-volume roadways. Nonintrusive technologies detect traffic from above or alongside a busy road. See http://www.dot.state.mn.us/guidestar/projects/pnitds.html, which includes a link to WisDOT’s experience with the devices.

MDOT, NDOR Go High-Tech for Safety

Montana DOT officials have an eye on the wind, while the Nebraska Department of Roads is raising the bar on work-zone safety. Both agencies were recently recognized by AASHTO for their efforts. Read the department’s press release to learn how MDOT uses high-tech solutions to monitor high winds at http://www.mdt.state.mt.us/dir/scripts/newsdata.pl?newname=20041115-101955.TOP. Read about NDOR’s use of Intelligent Transportation Systems to keep work crews safe at http://www.nebraskatransportation.org/news/news%20releases/current-month/aashto-nebrdor-11-18-04.pdf.

CDOT Aims to Clear Roundabout Congestion

Daily Aspen-bound traffic congestion had Colorado DOT officials looking for alternative ways to keep traffic moving around a Pitkin County roundabout. CDOT added new signs, striping and pavement markings to improve traffic flow during peak times. The city of Aspen and CDOT will continue to monitor the results of changes over the next two months. Read the release at http://www.dot.state.co.us/Communications/news/NW20041113-1.htm.

Safe Travel/Smart Travel

Partnering for Global Vehicle Safety Standards

More than 20 countries, including the United States, France and Britain, have agreed to require safer sliding doors on minivans as the first international safety standard for motorized vehicles. Keeping people inside vehicles in all crashes has become a top priority for safety engineers. Read more in *USA Today*: http://www.usatoday.com/money/autos/2004-11-16-safety-standards_x.htm.

511 Virginia Scores Well with Users

Telephone interviews were conducted with 400 users to help assess the impacts of Virginia's 511 travel information service on the traveling public. Ninety percent said information they received through the 511 Virginia interactive phone service was useful, and 49% said they had adjusted their travel plans based on information obtained through the 511 system. See the ITS Benefits and Costs Database at http://www.benefitcost.its.dot.gov/ITS/benecost.nsf/ByLink/BOTM-November2004.

Tennessee's Innovative Highway Safety Plan

State officials have finalized the Tennessee Strategic Highway Safety Plan, a first-of-its-kind agreement aimed at reducing fatalities 10% on the state's roads by fiscal year 2008-2009. Five agencies were involved in creating the plan, which calls for improving information systems and work zone safety, improving intersection safety with new technology, and implementing procedures and tools to keep vehicles in their lanes. Read the article in the Nashville *City Paper*: http://www.nashvillecitypaper.com/index.cfm?section_id=9&screen=news&news_id=37445.

NTOC Launches New Web Site

In partnership with the FHWA Office of Operations, the National Transportation Operations Coalition has developed a new Internet resource focusing on transportation management and operations and ITS. Called "NTOC Talks" (http://www.ntoctalks.com/), the site provides expanded coverage of operations news, issues and resources, including the new Talking Operations Web conference series. Courtesy of the TRB E-Newsletter.

What Was the Driver Doing?

A new device called DriveCam records video and audio from the commercial vehicle driver's perspective, giving the driver, employer and investigators a unique view of the driver's behavior. The idea is to catch and correct poor driving behavior by operators of buses, vans and other commercial vehicles before it results in an accident. Read the report from ABC News: http://abcnews.go.com/GMA/Technology/story?id=239521.